Credit Name: CSE 2110 Procedural Programming 1
Assignment Name: Prime Number Mastery
How has your program changed from planning to coding to now? Please explain?

PLANNING:

I plan to create a main method that will print the intro message, and then prompt the user for a number. Scanner will be set. User input will be declared as a variable. Separate method will calculate if the number is prime or not by trying to find a divisor. If the number isnt divisible, and its also greater than 1 (not negative or equal to 1), then the program will tell user that the number is prime. Else is not Prime.

CODING:

1.

```
public static void main(String[] args) {

      //intro message explaining the use of the program, and prompting user for input
         System.out.println("Welcome! This program will decide if a number you enter is Prime or not.");
         System.out.println("Please enter any number of your choice: ");

        // set scanner for user input
         Scanner input = new Scanner(System.in);

         // set the input as an int
         int num = input.nextInt();
```

Intro message
Prompt user for number
Scanner is set
User input number is stored as num variable

2.

```
   //method to check if user input number is prime or not
public static boolean isPrime (int num) {

       //for loop checks through possible divisors
   for (int i = 2; i * i <= num; i++) {

        if (num % i == 0) {

           return false; //divisor was found, number isn't prime

               }
   }
        if (num <=1){   //a Number equal to 1 is not prime, and a number less than 0 isn't prime.
           return false;

        }
        return true;   //If number is greater than 1 and there aren't any divisors, it is a prime number.
   }
```

Separate method called isPrime checks if number is prime.
For loop and if statement work together to search for possible divisors. If there is a divisor, isPrime is false.
If num is less than 1, isPrime is false. (prime numbers cant be negative, and 1 isn't prime).

Everything else is prime, so isPrime is true if it doesn't fall under the conditions such as negative, equal to 1, or divisible.

3.

```
//print statement to tell the user if the given number is prime or not.
  // directly added the method into the print statement
  //if isPrime is true, "is prime number" will print.
  //if isPrime is false, "is not prime" will print.
  System.out.println(num + (isPrime(num)? " is a prime number." : " is not a prime number."));

  System.out.println("Thank you!");
```

If isPrime is true, “is prime number” will print.
If isPrime is false, “is not a prime number” will print.
Thank you message is displayed.

End of Program!